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**TRANSMITTAL LETTER TO THE  
UNITED STATES  
DESIGNATED/ELECTED OFFICE  
(DO/EO/US) CONCERNING A FILING  
UNDER 35 U.S.C. 371**

U.S. APPLICATION NO.  
(if known, sec 37 C.F.R.1.5)

10/018792

INTERNATIONAL APPLICATION NO.  
PCT/DK00/00337INTERNATIONAL FILING DATE  
June 23, 2000PRIORITY DATE CLAIMED  
June 24, 1999TITLE OF INVENTION  
A METHOD AND A PACKAGING FOR PACKAGING AND FREEZING FOOD SUBSTANCESAPPLICANT(S) FOR DO/EO/US  
Roar B. SCHOU

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

**Items 11. to 16. below concern other document(s) or information included:**

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
- ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ Entitlement to small entity status is hereby asserted.
16. ☒ Other items or information: Submission of the Annexes to the IPER

U.S. APPLICATION NO. (if known, see 37 C.F.R. 1.5) <b>10/018792</b>		INTERNATIONAL APPLICATION NO. PCT/DK00/00337		ATTORNEY'S DOCKET NUMBER 111492	
17. <input checked="" type="checkbox"/> The following fees are submitted:  <b>Basic National fee (37 CFR 1.492(a)(1)-(5)):</b>  Search Report has been prepared by the EPO or JPO ....\$890.00  International preliminary examination fee paid to USPTO (37 CFR 1.482) .....\$710.00  No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) .....\$740.00  Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....\$1,040.00  International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) .....\$ 100.00  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				CALCULATIONS	PTO USE ONLY
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
Claims	Number Filed	Number Extra	Rate		
Total Claims	13 - 20 =	0	X \$ 18.00	\$	
Independent Claims	3 - 3 =	0	X \$ 84.00	\$	
Multiple dependent claim(s)(if applicable)			+ \$280.00	\$	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$1040.00	
Reduction by 1/2 for filing by small entity, if applicable.				-	\$
<b>SUBTOTAL =</b>				\$1040.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 month from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
<b>TOTAL NATIONAL FEE =</b>				\$1040.00	
				Amount to be refunded	\$
				Charged	\$
a. <input checked="" type="checkbox"/> Check No. <u>126268</u> in the amount of \$ <u>1040.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Director is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. <u>15-0461</u> . A duplicate copy of this sheet is enclosed.					
<b>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</b>					
SEND ALL CORRESPONDENCE TO: OLIFF & BERRIDGE, PLC P.O. Box 19928 Alexandria, Virginia 22320					
Date: <u>December 21, 2001</u>				NAME: <u>James A. Oliff</u> REGISTRATION NUMBER: <u>27,075</u>	
				NAME: <u>Joel S. Armstrong</u> REGISTRATION NUMBER: <u>36,430</u>	

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Roar B. SCHOU

Attn: PCT Branch

Application No. US National Stage of PCT/DK00/00337

Filed: December 21, 2001

Docket No.: 111492

For: A METHOD AND A PACKAGING FOR PACKAGING AND FREEZING FOOD  
SUBSTANCES

PRELIMINARY AMENDMENT

Director of the U.S. Patent and Trademark Office  
Washington, D. C. 20231

Sir:

Prior to initial examination, and after entry of the Annexes to the IPER, please amend  
the above-identified application as follows:

IN THE CLAIMS:

Please replace claims 3, 5-7 and 10-13 as follows:

3. (Amended) A method according to claim 1, wherein the carton packaging is transported on a conveyor at a given advancement rate, wherein the plate of unfrozen food substance is formed by initially extruding the food substance through an extruder nozzle (1) with a flow rate of food substance through the extruder nozzle that corresponds essentially to the advancement rate of the conveyor, and wherein the unfrozen, extruded food substance is subsequently cut off to form the finished unfrozen plate of food substance.

5. (Amended) A method according to claim 1 wherein the carton packaging containing the unfrozen plate of food substance is frozen between two freezer plates (13, 14) that abut with a given pressure on the bottom panel and cover panel of the carton packaging.

6. (Amended) A method according to claim 3, wherein the conveyor is provided with devices that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

7. (Amended) A method according to claim 3, wherein the packaging is positioned in a freezer frame that that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

10. (Amended) A liner for a block carton according to claim 8, wherein the first side, at least on a part of its surface, is provided with a coating that is essentially impermeable to liquid and preferably also to oxygen.

11. (Amended) A liner for a block carton according to claim 8, wherein the coating comprises wax or paraffin.

12. (Amended) A liner for a block carton according to claim 8, wherein the side panels comprise corner flaps corresponding to the corners of the bottom panel, and wherein the corner flaps on the first side comprises visual indicators.

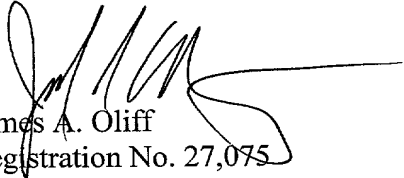
13. (Amended) A liner for a block carton according to claim 8, wherein the cover comprises side flaps on one or more of the cover edges, and wherein the liner on either the side flaps or the end panels comprises indicators for visual control whether the side flaps on the closed block carton are located on the outside of the side panels.

#### REMARKS

Claims 1-13 are pending. By this Preliminary Amendment, claims 3, 5-7 and 10-13 are amended to eliminate multiple dependencies. Prompt and favorable consideration on the merits is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Respectfully submitted,

  
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Joel S. Armstrong  
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JAO:JSA/zmc

Attached: APPENDIX

Date: December 21, 2001

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<p><b>DEPOSIT ACCOUNT USE AUTHORIZATION</b> Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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## APPENDIX

## Changes to Claims:

The following are marked-up versions of the amended claims:

3. (Amended) A method according to claim 1 ~~or 2~~, wherein the carton packaging is transported on a conveyor at a given advancement rate, wherein the plate of unfrozen food substance is formed by initially extruding the food substance through an extruder nozzle (1) with a flow rate of food substance through the extruder nozzle that corresponds essentially to the advancement rate of the conveyor, and wherein the unfrozen, extruded food substance is subsequently cut off to form the finished unfrozen plate of food substance.
5. (Amended) A method according to claim 1 ~~any one of the preceding claims~~ wherein the carton packaging containing the unfrozen plate of food substance is frozen between two freezer plates (13, 14) that abut with a given pressure on the bottom panel and cover panel of the carton packaging.
6. (Amended) A method according to claim 3 ~~any one of claims 3-5~~, wherein the conveyor is provided with devices that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.
7. (Amended) A method according to claim 3 ~~any one of claims 3-5~~, wherein the packaging is positioned in a freezer frame that that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.
10. (Amended) A liner for a block carton according to claim 8 ~~or 9~~, wherein the first side, at least on a part of its surface, is provided with a coating that is essentially impermeable to liquid and preferably also to oxygen.

11. (Amended) A liner for a block carton according to claim 8~~any one of claims 8-10~~, wherein the coating comprises wax or paraffin.

12. (Amended) A liner for a block carton according to claim 8~~any one of claims 8-11~~, wherein the side panels comprise corner flaps corresponding to the corners of the bottom panel, and wherein the corner flaps on the first side comprises visual indicators.

13. (Amended) A liner for a block carton according to claim 8~~any one of claims 8-12~~, wherein the cover comprises side flaps on one or more of the cover edges, and wherein the liner on either the side flaps or the end panels comprises indicators for visual control whether the side flaps on the closed block carton are located on the outside of the side panels.

A method and a packaging for packaging and freezing food substances

5 The present invention relates to a method for packaging and freezing food substances, comprising shaping of a plate of unfrozen food substance and subsequent packaging and freezing of the unfrozen plate of food substance. The invention also relates to a packaging of the block-carton type adapted especially for the method corresponding to  
10 the present invention.

15 In particular in connection with the packaging and freezing of relatively homogenous fish substances, such as Surimi or the like fish products, the above-mentioned method is widely used today. The known method takes place for instance by the unfrozen food substance being extruded and cut off in plates that are subsequently filled into a plastics bag that is positioned in a freezing frame that consists of a bottom and four side  
20 faces. Following positioning of the unfrozen plate of fish substance in the freezing frame, it is positioned in a plate freezer whereby the plate of unfrozen fish substance is frozen while in the freezer tray. In this case it is one of the objects of the plastics bag to  
25 ensure that the plate of fish substance does not freeze onto the freezer plates of the plate freezer, and likewise the plastics bag is to protect the foodstuff against drying out, rancidity and "freeze burn".

30 The freezer tray is subsequently removed from the plate freezer and the plate of fish substance frozen in the plastics bag is removed from the freezer tray and the frozen plate of fish substance is packed further in a carton packaging.

- Block cartons are a type of packaging that is used for manual packaging of fresh foodstuffs prior to freezing, eg within the fish industry for freezing fish or fish products, cf eg WO 97/06064. Conventionally a block carton is manufactured in the form of a plane liner with pre-embossed folding lines that is converted to a packaging by being erected in a so-called freezing frame. Within the industry such liner is also known by the designation "fishblock liner", "sheet" or "blanket" and consists of a bottom panel with a front and rear side panel and two opposed, shorter end-side panels, also designated end panels, wherein the rear panel is connected to one side of a cover panel, and wherein the cover panel can be provided with one or more flaps along the remaining sides of the cover. In order to ensure the user optimal access to the open block carton, the cover is arranged on one of the side panels.
- In order to ensure improved closure of the carton when it is erected in a freezing frame, the side panels can be provided with corner segments in the form of corner flaps attached to a single side panel, as described eg in WO 97/11890. Such closure of the corners protects against liquid seeping out of the erected carton, and likewise the contents are protected against damage (freeze burn) during the subsequent freezing procedure. Correspondingly the cover can be provided with side flaps.
- It should be noted that it is important that the corner flaps and the side flaps of the cover are located on the outside of the carton since it is undesirable to have them frozen into the fish or correspondingly. This would mean that when the carton is removed from the frozen

commodity, a part of the carton would more or less visibly remain in the commodity, which is undesirable for obvious reasons.

5 The work involved in erecting the block carton in the freezing frame is conventionally performed manually which means that the above-mentioned errors occur easily, in particular in view of the very elevated work rate at which this work is performed.

10 A variety of different solutions have been proposed to the problem of avoiding that portions of the block carton are frozen into the fish or the like.

15 Thus, WO 96/02422 teaches a block carton as described above that is provided with indicators on the liner corresponding to the outsides of the folded carton, said indicators becoming visible in case of erroneous closure of the block carton. It is a drawback in connection with  
20 this block carton that the visual inspection of the block carton cannot be performed until after discharge of the block from the square freezing frame, ie after the carton has been filled with fish or the like, closed and frozen. Erroneous closure of the block carton thus presupposes  
25 that the all of the fish is initially removed from the block carton, following which the fish needs to be thawed to enable a renewed filling operation. Thus, in case of erroneous closure of the block carton a heavy workload is involved in remedying this erroneous closure.

30 WO 97/11890 teaches a block carton as described above that is provided with indicators on the liner corresponding to the insides of the folded carton, said indicators becoming visible in case of erroneous closure

of the corner flaps of the block carton. This type of indicators enables control of correct folding prior to filling of the carton.

- 5 A third option would be to use both of said indicator systems on the same liner, which would facilitate control during as well as after performing this work.

Conventionally a liner for a block carton consists of a  
10 cardboard blank coated on the one side with a coating intended to ensure that the foodstuff does not freeze onto the interior face of the block carton. Typically, the coating consists of a wax or paraffin product. In order to further ensure that the packaging is able to  
15 receive a part of the moisture emitted during the freezing process, the coating can be provided with a number of openings, typically a large number of small openings, also designated pin-holes that can have a maximum diameter of up to 3 mm, but they are typically  
20 smaller than 1 mm. Additionally these small openings have the effect that the food substance does not freeze onto the entire inside of the packaging, and therefore that they are readily released there from. For further controlling evaporation from the packaged foodstuff it is  
25 an option that, on its other side, the packaging is also provided with a coating, but such will typically not be provided with openings. For some types of block cartons a through-going coating is used for the interior face, to which coating an uneven surface has been imparted by  
30 embossing the cardboard with a given pattern.

In the light of this, it is the object of the present invention to provide a method whereby a more simple and inexpensive packing and freezing process can be obtained.

It is furthermore an object to further prevent the foodstuff from drying out or becoming rancid.

According to a first aspect and according to the present invention this is accomplished by a method that simplifies the known principles by enabling that the fish substance is frozen directly within the final packaging thereby enabling quicker and less expensive manufacture. More specifically, these advantages are obtained by the plate-formed, unfrozen food substance being, following shaping by extrusion, positioned directly on a bottom face of an erected carton packaging following which the cover panel of the carton packaging is closed over the bottom face such that the unfrozen plate of food substance is completely enclosed by the bottom face, cover panel and side panels of the carton packaging following which the carton packaging containing the unfrozen plate of food substance is arranged in a freezer with a view to freezing of the plate of food substance whereby the carton packaging is frozen onto the plate of food substance.

In order to ensure correct positioning of the unfrozen plate within the packaging the plate would expediently be "directed" down into the packaging. According to a preferred embodiment this is ensured in that the plate is shaped "longitudinally", ie that the plate is extruded with a width corresponding to the extrusion nozzle that is smaller than the length of the cut-off plate. In order to also ensure that the front end of the plate (ie most distant from the extruder) is not positioned on top of the end panel of the packaging but within same, the cover panel of the packaging is - in a preferred embodiment - arranged on one of the short side panels thereby enabling

that the foodstuff plate is extruded towards an upright cover panel that thereby serves to ensure that the plate is positioned correctly within the packaging. The fact that the extrusion of the food substance is effected

5 "longitudinally" also means that the production equipment (eg the extruder and a conveyor) can have relatively small dimensions, which is advantageous in confined spaces onboard a vessel.

10 Thus, it is hereby possible to provide carton-packaged blocks of fish substance or other food substance without an ensuing risk of the fish substance freezing onto the freezing faces of a freezer, and the packaging can be rendered less expensive and more simple in that only one

15 single packaging process is required, and in that the previously used freezer trays and associated storage and maintenance thereof are rendered superfluous.

According to a preferred embodiment of the invention the

20 plate of unfrozen food substance is formed by extrusion of the food substance through an extrusion nozzle directly down onto the packaging bottom, and subsequently cutting off the unfrozen string of food substance to form the finished, unfrozen plate of food substance.

25 The method according to the present invention can be further automated in that the carton packaging is transported on a conveyor at a given rate of conveyance, and in that the plate of unfrozen food substance is

30 extruded at a rate that corresponds substantially to the rate of conveyance of the conveyor.

Particularly advantageously the carton packaging containing the unfrozen plate of food substance is frozen

between two freezer plates that abut on a the bottom panel and cover panel of the carton packaging with a certain pressure. Thus, hereby an extremely expedient conduction of heat is accomplished from the food substance through the cover and bottom face of the carton packaging and to the freezer plates.

Further advantageously spacer elements can be provided between the freezer plates with a view to ensuring a minimum distance between the freezer plates during the freezing procedure whereby it is ensured that the finished, frozen, packaged plates of food substance have the same height.

In order to offer optimal protection of the foodstuff against drying-out, rancidity and "freeze burn", the packaging is - in a preferred embodiment - at least on the one side coated with a coating that prevents evaporation from the inside as well as access of oxygen from the outside. Today, this is not possible with the plastics bags of polyethylene that are conventionally used in the freezing procedure of Surimi or other extruded foodstuffs. Such improved protection of the foodstuff during freezing and storage increases the quality of the frozen foodstuff.

A further aspect of the invention relates to a carton packaging for use in the method according to the invention.

30

The carton packaging according to the invention comprises essentially rectangular bottom panel with four sides to which two opposed side panels and two opposed shorter end panels are connected, and a cover panel with four sides

wherein the cover panel and the bottom panel are connected to each other via one of the short end panels. In order to ensure adequate functionality, the carton packaging is further provided with a coating on at least  
5 the one side. The term "the one side" is used to designate either the one side of the two sides of the plane, not yet erected liner, or the interior side of the erected carton packaging.

10 As opposed to the conventional block cartons that are intended for use in manual positioning of a foodstuff with ensuing positioning of the cover on the one of the two longer sides of the packaging, the block carton (or a liner for a block carton) according to the present  
15 invention is intended for use exclusively in connection with direct filling of a plate of food substance from an extrusion device. As described above this ensures easy and reliable positioning of the plate on the bottom face of the packaging.

20 According to preferred embodiments the packaging can be provided with corner flaps and indicators as described above.

25 The invention also relates to an apparatus for use in the method according to the invention, and wherein the apparatus according to the invention comprises a conveyor, said conveyor having a transport face that moves in the direction of conveyance of the conveyor, and  
30 wherein there is provided - at each side of the conveyor - elevations that extend in the longitudinal direction of the conveyor and above the transport face of the conveyor, said elevations being arranged at a distance from each other that corresponds to the short lateral

length of the bottom panel of a carton packaging with a view to supporting the side panels of the carton packaging at a right angle relative to the bottom panel of the carton packaging. Hereby it is obtained that the unfrozen food substance positioned on the bottom panel of the carton packaging is covered as quickly as possible by side faces on the carton packaging.

This advantage is further enhanced if the conveyor has, on its transport face, drivers that extend from the transport face with a view to supporting a short side panel on the carton packaging.

The invention will now be described in further detail with reference to the drawing, wherein:

Figure 1 is an explanatory sketch that illustrates the method and the principles of the construction of an apparatus for use in connection with the invention; and

Figure 2 is a drawing that illustrates a preferred embodiment of a carton packaging for use in the method according to the invention.

Figure 1 is an explanatory sketch of an apparatus for packaging and freezing food substance. Thus, the apparatus comprises an extruder of which Figure 1 shows only the front portion of the extruder nozzle of the extruder 1 from which a plate 2 of food substance of a substantially rectangular cross section is extruded. At the extruder nozzle 1 a cutter mechanism 3 is provided with a view to cutting off the extruded food substance 2 in suitable lengths.

Underneath the extruder nozzle 1 a conveyor 4 is arranged which is configured herein as a conveyor belt 5 on which a first carton packaging 6 is arranged that has a bottom portion 7 and a cover portion 8. As will appear the cover portion 8 in the first carton packaging 6 is open, and in the shown position the food substance 2 is extruded down into the first carton packaging 6 that comprises erected short and long side panels where the side panel that faces towards the viewer is not shown for the sake of overview.

As will appear from the figure, the food substance is extruded in a direction towards the upright cover panel 8 of the packaging thereby preventing that the front end of the plate (ie most distant from the extruder) is not positioned on top of or outside the end panel of the packaging, but within this. In the event that the food substance is positioned in part on the inside of the cover panel, this part of the food substance is pressed down into the packaging when the cover is closed. Since completely correct positioning of the food substance is thus not necessary this arrangement enables filling of the packaging at a higher rate. In the figure, the packaging is shown without side panels towards the viewer.

The carton packaging is subsequently transported a further distance and will, at a later stage, occupy the position occupied by the other carton packaging 9. Here the cover 10 of the carton packaging 9 has be closed across the bottom portion 11 such that the amount of food substance 12 positioned in the other carton packaging is enclosed by the carton packaging 9.

The filled carton packaging 9 is subsequently transferred to a plate freezer that, in principle, comprises at least two freezer plates 13,14 that press against the cover and bottom portion of the carton packaging 9 whereby the non-frozen contents of the carton packaging 9 are frozen to a solid block. According to a preferred embodiment of the invention, the plate freezer is provided with spacer elements 15,16 that ensure a uniform distance between the freezer plates 13,14 whereby an even thickness is imparted to the ready-packaged food product. The two freezer plates abut with a given pressure P on the bottom panel and cover panel of the carton packaging.

When the food substance plate is frozen, it will normally expand and therefore it is necessary to take this into account when selecting the dimensions of the plate of food substance such that the cross section of the unfrozen plate is smaller than the cross section of the packaging perpendicular to its longitudinal axis. On the other hand it is also important that the ready-frozen food substance comes into contact with the side panels of the packaging. With this as a starting point, the final choice of dimensions for the plate of unfrozen food substance is a choice that must be made by the person skilled in the art in accordance with the circumstances, eg the type of food product, the size of the packaging and the freezing conditions.

The conveyor 4 features lateral elevations 17 that extend in the longitudinal direction of the conveyor belt 5, and drivers 18 are configured on the transport face of the conveyor belt 5, said side elevations 17 and drivers 18 being arranged such that side panels on the carton packagings 6,9 are kept perpendicular to the bottom panel

7,11 of the carton packaging. Hereby adequate, mutual positioning of the carton packaging 6,9 and the food substance 2,12 is ensured. To facilitate overview, the side elevations facing towards the viewer are not shown.

5

Instead of a conveyor with elevations and drivers, individual freezing frames can be used such that the carton packagings are first erected in a freezing frame, following which the food substance is extruded down into the erected packaging. Advantageously the freezing frames are arranged and charged onto a conveyor that is preferably configured for advancing the freezing frames at a velocity that corresponds to the extrusion rate of the food substance.

10

15

As described with reference to Figure 1, the cover 8 is arranged on one of the short side panels of the packaging.

20 Now Figure 2 illustrates an advantageous embodiment of a carton packaging 6 for use in the method according to the present invention.

As will appear the carton packaging 6 is shown as a planar blank that comprises a substantially rectangular bottom panel 7 for which the long side edges are provided with long side panels 19,20, and the short side edges are provided with short side panels 21,22. At the side edges the bottom panel 7 is provided with embossed lines (indicated by dotted lines in the figure), said embossed lines separating the bottom panel 7 from the side panels 19,20,21,22, and corner flaps 24 are attached at the ends of the short side panels via embossed lines.

25

30

When the bottom panel 7 on the carton packaging 6 is positioned on the conveyor belt 5 as shown in Figure 1, the long side panels 19,20 will thus abut on the elevations 17 and extend perpendicularly from the bottom panel 7, and the same will apply to the short side panels 21,22 that are, on the conveyor belt, supported by the drivers 18 on the conveyor belt 5. When the packaging is erected by means of a freezing frame the side panels will, in a corresponding manner, abut on the interior faces of the freezing frames.

According to the invention, the cover 8 is positioned on the one of the short side panels 22 (separated by embossing lines), and as shown the cover 8 has the same length and width as the bottom panel 7. Hereby the cover 8 can tilt across the bottom panel 7 and thus cover it completely. In order to ensure the tightest possible packaging the cover is, as shown, provided with side flaps 23 that are attached to the cover 8 via embossing lines (shown with dotted line). Correspondingly the cover is, as shown, provided with side flaps 23 that are attached to the cover 8 via embossed lines (shown with dotted line).

As described above the liner can be provided with indicators that enable a control whether the block carton has been erected or folded correctly. Figure 2 shows a liner seen from the topside, ie the side that faces inwards/upwards in the erected block carton. The liner is provided with indicators 40 on the internal side of the corner flaps 24. Since the corner flaps are, in the correctly erected block carton, to be located on the outside of the side panels, non-visible indicators 40 will show that the carton is erected correctly.

Correspondingly it will be possible to provide the side panels with indicator (not shown) corresponding to the areas that are covered by the corner flaps 24 when the carton is erected. In that case the absence of an indicator will indicate that the corner flap is located on the wrong, interior side of the side panel. Additionally, the liner is on the opposite side (ie the underside) provided with indicators (41) shown with dotted line) on the side flaps 23. When the cover is closed correctly, the side flaps are located on the outside of the closed packaging and it follows that the indicators 41 are visible. Instead of the corner flaps, the side panels can be provided with indicators (not shown) that are covered when the cover is closed correctly. Typically, the indicators are coloured, printed indicators that enable swift and reliable visual control.

C l a i m s

1. A method of packaging and freezing food substance, comprising the steps of:

- 5 - extruding a plate of unfrozen food substance (2);
- packaging the unfrozen plate of food substance in a carton packaging (6);
- wherein the carton packaging comprises a substantially rectangular bottom panel (7) with two opposed, erected, long side panels (19, 20), and two opposed, erected, short end panels (21, 22) and a substantially rectangular cover panel (8);
- 10 - wherein the unfrozen plate of the food substance is positioned on the bottom panel of the carton packaging, following which the cover panel of the carton packaging is closed to cover the bottom panel such that the unfrozen plate of food substance is completely enclosed by the bottom panel, cover panel and side panels of the
- 15 carton packaging;
- following which the carton packaging containing the unfrozen plate of food substance is positioned in a freezer (13, 14) with a view to freezing the plate of food substance whereby the carton packaging is frozen
- 20 completely onto the plate of food substance.
- 25

2. A method according to claim 1 wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

30

3. A method according to claim 1 or 2, wherein the carton packaging is transported on a conveyor at a given advancement rate, wherein the plate of unfrozen food substance is formed by initially extruding the food substance through an extruder nozzle (1) with a flow rate of
- 35 food substance through the extruder nozzle that corre-

sponds essentially to the advancement rate of the conveyor, and wherein the unfrozen, extruded food substance is subsequently cut off to form the finished unfrozen plate of food substance.

5

4. A method according to claim 3, wherein the food substance is extruded directly into the carton packaging.

5. A method according to any one of the preceding  
10 claims wherein the carton packaging containing the unfrozen plate of food substance is frozen between two freezer plates (13, 14) that abut with a given pressure on the bottom panel and cover panel of the carton packaging.

15 6. A method according to any one of claims 3-5, wherein the conveyor is provided with devices that keep the side panels attached to the bottom panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the  
20 unfrozen plate of food substance.

7. A method according to any one of claims 3-5, wherein the packaging is positioned in a freezer frame that that keep the side panels attached to the bottom  
25 panel essentially perpendicular to the bottom panel while the carton packaging is transported on the conveyor and charged with the unfrozen plate of food substance.

8. A liner (6) for a block carton, wherein the  
30 liner is manufactured from a basis material, preferably cardboard or carton, and comprises:

- a first and a second side defining a first and a second surface, wherein the first side, at least on a part of its surface, is provided with a coating that is  
35 substantially impermeable to liquid, and wherein the coating comprises a number of small apertures distributed

across the surface such that, through the apertures, there is connection between the surroundings and the basis material of the liner;

- a substantially rectangular bottom panel (7) with two opposed, long side panels (19, 20) and two opposed, short end panels (21, 22), and a substantially rectangular cover panel (8) corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

10

9. A liner for a block carton, comprising:

- a first and a second side defining a first and a second surface, wherein the first side, on at least a part of its surface, is provided with a coating, and wherein the coating comprises a number of embossments resulting in a non-planar surface;

15

- a substantially rectangular bottom panel (7) with two opposed, long side panels (19, 20) and two opposed, short end panels (21, 22) and a substantially rectangular cover panel (8) corresponding to the bottom panel, wherein the cover panel and the bottom panel are connected to each other via one of the short end panels.

20

10. A liner for a block carton according to claim 8 or 9, wherein the first side, at least on a part of its surface, is provided with a coating that is essentially impermeable to liquid and preferably also to oxygen.

25

11. A liner for a block carton according to any one of claims 8-10, wherein the coating comprises wax or paraffin.

30

12. A liner for a block carton according to any one of claims 8-11, wherein the side panels comprise corner flaps corresponding to the corners of the bottom panel,

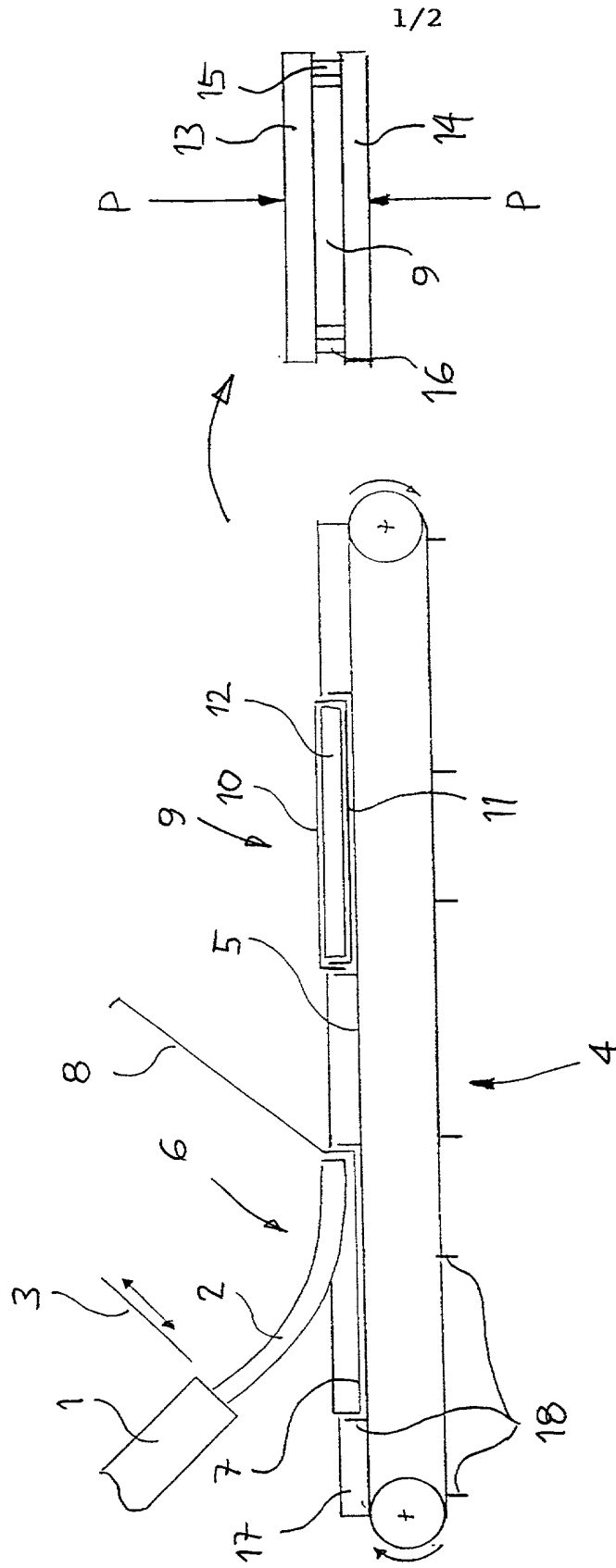
35

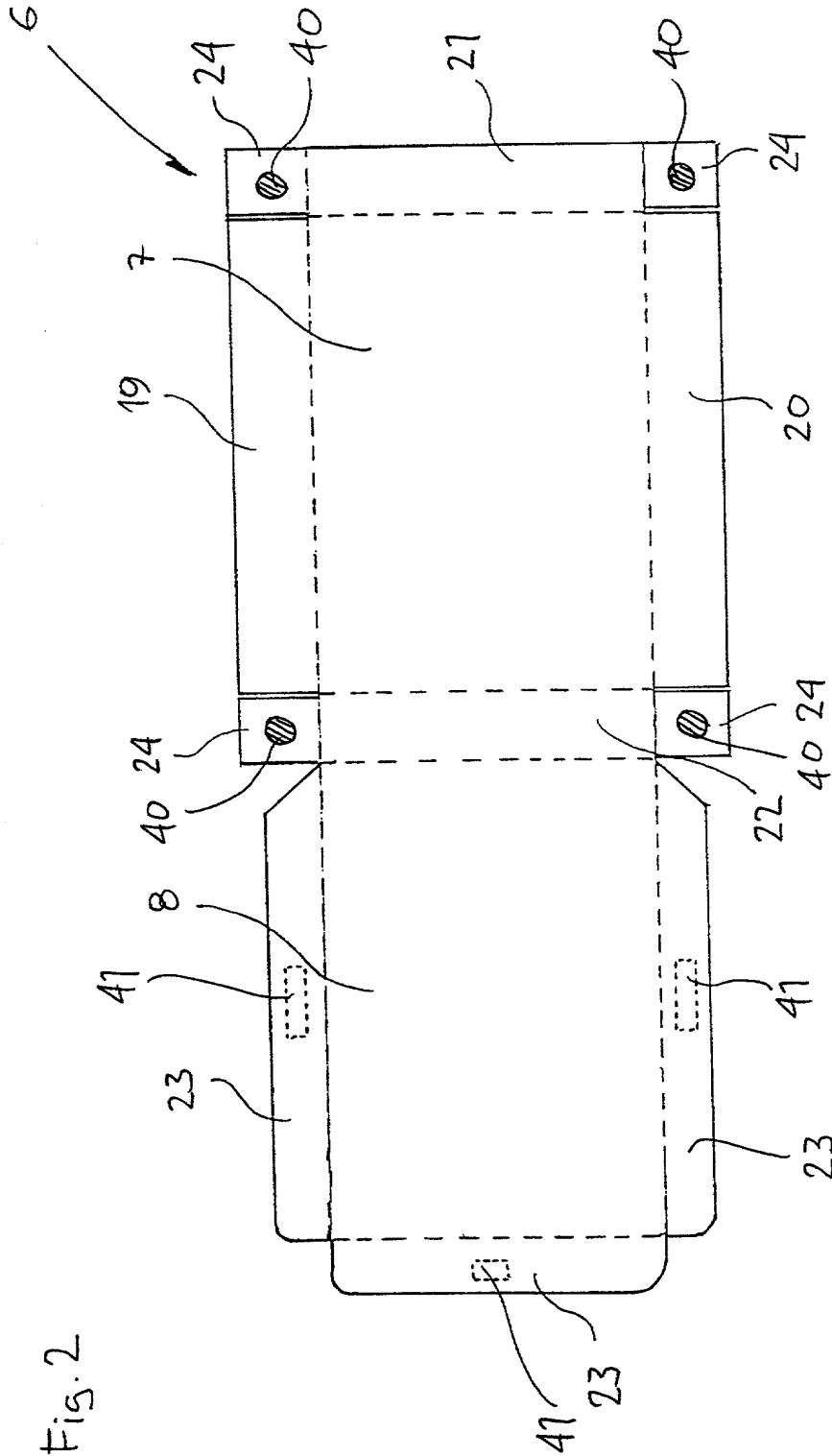
and wherein the corner flaps on the first side comprises visual indicators.

13. A liner for a block carton according to any one of claims 8-12, wherein the cover comprises side flaps on one or more of the cover edges, and wherein the liner on either the side flaps or the end panels comprises indicators for visual control whether the side flaps on the closed block carton are located on the outside of the side panels.

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15.1





**DECLARATION AND POWER OF ATTORNEY  
UNDER 35 USC §371(c)(4) FOR  
PCT APPLICATION FOR UNITED STATES PATENT**

As a below named inventor, I hereby declare that:

my residence, post office address and citizenship are as stated below under my name;

SCHOU, Roar B., Strandvejen 23, DK-3700 Rønne, DENMARK

I verily believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought, namely the invention entitled: <sup>\*</sup> ) described and claimed in international application number \_\_\_\_\_

PCT/DK00/00337 filed 23 June 2000

A method and a packaging for packaging and freezing food substances

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations §1.56.

Under Title 35, U.S. Code §119, the priority benefits of the following foreign application(s) filed within one year prior to my international application are hereby claimed:

Danish Patent Application No PA 1999 00906 of 24 June 1999

The following application(s) for patent or inventor's certificate on this invention were filed in countries foreign to the United States of America either (a) more than one year prior to my international application, or (b) before the filing date of the above-named foreign priority application(s):

I hereby appoint the following as my attorneys of record with full power of substitution and revocation to prosecute this application and to transact all business in the Patent Office:

*4* James A. Oliff, Reg. No. 27,075; William P. Berridge, Reg. No. 30,024;  
Kirk M. Hudson, Reg. No. 27,562; Thomas J. Pardini, Reg. No. 30,411;  
Edward P. Walker, Reg. No. 31,450; Robert A. Miller, Reg. No. 32,771; and  
Mario A. Costantino, Reg. No. 33,565.

ALL CORRESPONDENCE IN CONNECTION WITH THIS APPLICATION SHOULD BE SENT TO OLIFF & BERRIDGE, PLC, P.O. BOX 19928, ALEXANDRIA, VIRGINIA 22320, TELEPHONE (703) 836-6400.

I hereby declare that I have reviewed and understand the contents of this Declaration, and that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1	Typewritten Full Name of Sole or First Inventor	<u>Roar</u>	<u>B.</u>	<u>Schou</u>
		Given Name	Middle Initial	Family Name
2	Inventor's Signature	<u>Roar B. Schou</u>		
3	Date of Signature	<u>04</u>	<u>10</u>	<u>2002</u>
		Month	Day	Year
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Note to Inventor: Please sign name on line 2 exactly as it appears in line 1 and insert the actual date of signing on line 3.

IF THERE IS MORE THAN ONE INVENTOR USE PAGE 2 AND PLACE AN "X" HERE ☐